Biology is an in-depth course that furthers mastery of scientific skills, fosters a deep understanding of key concepts, and promotes the application of the scientific method to biological topics.

The course begins with an introduction to the nature of science and biology, including the major themes of structure and function, matter and energy flow, systems, and the interconnectedness of life. Students then apply those themes to the structure and function of the cell, cellular metabolism, and biogeochemical cycles. Building on this foundation, students explore the connections and interactions between living things by studying genetics, ecosystems and natural selection, and evolution. The course ends with an applied look at human biology.

Lab activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science.

Biology students are frequently asked to respond to scientific problems and issues via written assignments. Exploration activities challenge Honors students to deconstruct scientific claims, analyze scientific articles, and suggest follow-up experiments or topics for further research. Finally, Project and Checkup activities allow Honors students to use scientific process skills to delve deeper into topics.

This course is built to state standards and the National Science Education Standards (NSES).

Length: Two Semesters

Unit 1: Introduction to Biology

- Biology as Science
- Connections in Biology
- Doing Science: Introduction to Biology
- Introduction to Biology Wrap-Up

Unit 2: The Chemistry of Biology

- Chemistry of Life
- Carbohydrates, Lipids, and Nucleic Acids
- Proteins, Enzymes, and Water
- Doing Science: The Chemistry of Biology
- The Chemistry of Biology Wrap-Up

Unit 3: Cells

- Cell Structure
- Cell Membrane

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- Cell Differentiation
- Doing Science: Cells
- Cells Wrap-Up

Unit 4: Energy Transfer

- Photosynthesis
- Cellular Respiration
- Matter and Energy
- Doing Science: Energy Transfer
- Energy Transfer Wrap-Up

Unit 5: Earth's Resources

- Biogeochemical Cycles
- A Changing Earth
- Solutions for the Future
- Doing Science: Earth's Resources
- Earth's Resources Wrap-Up

Unit 6: Semester 1 Review and Exam

- Semester 1 Review and Exam

Unit 7: DNA and Heredity

- The Code of Life
- Passing On Traits
- Mendelian Genetics
- Doing Science: DNA and Heredity
- DNA and Heredity Wrap-Up

Unit 8: DNA to Protein

- Structure of Genetic Material
- From DNA to Protein
- Changes to DNA
- Doing Science: DNA to Protein
- DNA to Protein Wrap-Up

Unit 9: Ecosystems and Natural Selection

- Ecosystems
- Populations
- Adaptation and Natural Selection
- Doing Science: Ecosystems and Natural Selection
- Ecosystems and Natural Selection Wrap-Up

Unit 10: Evolution and Classification

- Evolution
- Classification
- Diversity of Life

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- Doing Science: Evolution and Classification
- Evolution and Classification Wrap-Up

Unit 11: Human Biology

- Structure of the Body
- Fuel, Defense, and Signaling
- Reproduction and Development
- Doing Science: Human Biology
- Human Biology Wrap-Up

Unit 12: Semester 2 Review and Exam

- Semester 2 Review and Exam

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